

COLONIAL PARKWAY,
ISTHMUS BRIDGE
spanning the Back River Isthmus
Yorktown vicinity
York County
Virginia

HAER No. VA-48-P

HAER
VA
100-YORK,
18P-

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

HISTORIC AMERICAN ENGINEERING RECORD
National Park Service
Department of the Interior
P. O. Box 37127
Washington, D.C. 20013-7127

HISTORIC AMERICAN ENGINEERING RECORD

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ISTHMUS BRIDGE
Colonial National Historical Park
HAER No. VA-48-P

Location: Between Glasshouse Point and Jamestown island on a restored isthmus along the Colonial Parkway, Williamsburg vicinity, James City County, Virginia
Quad: Surry, VA
UTM: 18/341875/4119950

Date of Construction: 1955-1956

Type of Structure: Steel I-Beam bridge with reinforced concrete substructure on timber pilings.

FHWA structure No.: 4290-026P

Use: Vehicular bridge

Designer/Engineer: Eastern Division, Branch of Design and Construction, National Park Service.

Builder: Rea Construction Company, Charlotte, North Carolina, and C.P. Buckner Steel Erection Services, Chapel Hill, North Carolina.

Owner: National Park Service

Significance: Construction of the Isthmus Bridge, also known as the bridge between Glasshouse Point and Jamestown island, marked the final link between the Colonial Parkway and the island along a reconstructed isthmus. The bridge, which is a similar design to both Mill and College creek bridges, is built on an area exposed to extensive erosion from the James River and requires continued maintenance of the shore protection around its abutments. Plans are being prepared to rebuild and enlarge the current riprap wall.

Project History:

Documentation of the Isthmus Bridge is part of the Colonial National Historical Park Roads and Bridges Project, conducted in summer 1995 by the Historic American Engineering Record, National Park Service.

Historian:

Michael G. Bennett, HAER Historian, 1995

INTRODUCTION

Along with photographs, measured drawings, and an overview history of the Colonial National Historical Park roads and bridges (HAER No. VA-115), individual reports on certain bridges, park tour roads (Jamestown Island Tour Road HAER No. VA-116, and the Yorktown Battlefield Roads HAER No. VA-117), and other structural features of the Colonial Parkway are part of this documentation. These reports provide a more detailed history of a structure's design and construction. Similar documentation for Colonial National Historical Park was completed by HAER in 1988 for the Colonial Parkway (HAER No. VA-48), the Navy Mine Depot Overpass (HAER No. VA-48-A), Capitol Landing Underpass (HAER No. VA-48-B), the C & O Railroad Underpass (HAER No. VA-48-C), and the Williamsburg Tunnel (HAER No. VA-48-D).

CONTEXT

Constructed between 1931 and 1957, the Colonial Parkway is the key transportation feature of Colonial National Historical Park. Crossing the Tidewater peninsula, the road is a scenic link between the "historic triangle" of Jamestown, Williamsburg, and Yorktown--a distance of about 23 miles--designed to provide continuity in the transition from one historical era to another. The Colonial Parkway represents one of the first attempts of the National Park Service to integrate parkway design principles standardized in Westchester County, New York during the 1920s with its own traditions of landscape architecture. Under the initial direction of Charles E. Peterson, chief landscape architect for the Eastern Division of the Branch of Plans and Design, the parkway was constructed to harmonize the scenic qualities of the Tidewater environment with the region's colonial material culture.

Modern highway design and engineering practices were utilized in the construction of the parkway. The alignment of the road is comprised of a variation of spiral and single-centered curves with limited tangents, set in a right-of-way averaging 500' with broad landscaped slopes. Commercial development is prohibited, and access to the road is limited to provide motorists an

uninterrupted flow through the landscape thought to be essential to the historic experience of the park. Extensive "cut and fill" operations were used to create a road with maximum curves of 50° and grades no greater than 5 percent.

The decision to align the parkway along both the York and the James Rivers required the use of hydraulic fill to create a road embankment. Low level concrete slab bridges blend with the sandy areas of fill, providing open views of the rivers and marshes. In the vicinity of Williamsburg, filled spandrel concrete arch bridges with colonial style brick veneer provide separated grade underpasses for federal, state, and county roads. To simulate the character of a "country road," the parkway's pavement was limited to a width of 30' and specially treated to expose the extra large aggregate in the concrete. All of these features, along with interpretive markers, create a roadscape with unity, variety, and character, three common elements of NPS landscape design tradition.

PLANNING FOR THE PARKWAY'S COMPLETION

Day to day operations at Colonial National Historical Park began to return to normal after the end of World War II. Maintenance of the park and the parkway was a major priority for park staff, who no longer had available the manpower of Civilian Conservation Corps, which was disbanded in the park in 1942. The reopening of the parkway, closed for national defense through Navy lands, required the removal of access roads built by the military for wartime training and transport on the parkway. Slopes and trees destroyed from excessive use required extensive restoration. New construction on the parkway was limited to minor work on the tunnel under Williamsburg, and a separated grade crossing for State Route 168 (now Route 143). Between 1947, when the final tracts of land to Jamestown island were acquired, and 1953 there was increased planning activity connected to the completion of the parkway for the 350th anniversary of the founding of Jamestown. Much of this work was coordinated by regional landscape architect

Stanley Abbott, who became superintendent of Colonial in 1953.¹

The Korean War continued to delay new roadway construction until the armistice was signed in 1953. In the interim, meetings were held between officials of the Park Service, the Colonial Williamsburg Foundation, the Army Corps of Engineers, and the Association for the Preservation of Virginia Antiquities concerning the alignment of the road, the location of bridges, and the use of hydraulic fill between Jamestown and Williamsburg. Conferences were also held with the Virginia Department of Highways on the possible relocation of Route 31 and the Scotland Ferry north and west of the parkway's terminus with Glasshouse Point.²

The greatest impetus for the completion of the parkway came in the form of Mission 66. In response to the overstressed facilities of the National Park Service by the 1950s, Director Conrad L. Wirth devised a 10-year program to develop park lands, and create a more systematic management plan for the Service's 50th anniversary in 1966.³ Colonial became one of the first parks to benefit from Mission 66 funding as planning for the Jamestown celebration was well underway by 1954-1955. Beginning in fiscal year 1955, Colonial was allocated over \$7.5 million as part of the "President's Budget for Parkways, Roads and Trails, and Buildings and Utilities." A field conference attended by

¹Edward Hummel, Superintendent's Monthly Narrative Reports, January-May 1949, file 207.02.3, collection of the Colonial National Historical Park.

²U.S. Jamestown-Williamsburg-Yorktown Celebration Commission, *The 350th Anniversary of Jamestown: 1607-1957*, Final Report to the President and Congress, (Washington, DC: Government Printing Office, 1958), 40-45; Lon Dill, "Colonial Parkway Extension to Jamestown," *The Commonwealth Magazine of Virginia* 22(September 1955): 19-21.

³Barry MackIntosh, *The National Parks: Shaping the System* (Washington, DC: Department of the Interior, Government Printing Office, 1991), 62-65.

Thomas Vint, Edward Zimmer, H. J. Spelman, and William H. Smith was held in Yorktown between January 13 and 16 to review park construction projects proposed for 1955 and 1956.⁴ This conference set the stage for a two year program of construction and rehabilitation that led to the completion of the Colonial Parkway, and a reshaping of the entire park landscape.

ISTHMUS BRIDGE

Like the bridges at Felgate and Indian Field creeks along the York River, the construction of the bridge between Glasshouse Point and Jamestown Island had to wait for extensive hydraulic fill to provide an embankment for 2 miles of the parkway along the James River. Numerous surveys in the early 1950s between Park Service landscape architects, engineers from the Bureau of Public Roads, representatives of the Virginia Highway Department, and the Army Corps of Engineers established the location of fill at College Creek, Mill Creek and adjacent areas to restore the original land approach to the island. Meetings were also held with local fishermen to hear their concerns about continued access to the river channels. Although originally proposed in the Park's "Outline of Development" in 1933, the plan to recreate the isthmus between Glasshouse Point and Jamestown Island with hydraulic fill did not receive considerable attention until the late 1940s.

A 1947 proposal for the isthmus called for a roadway embankment at an 11' elevation, spreading to a width of 500'. At the time, park superintendent Jean C. Harrington believed that a earthwork that large would be incompatible with the island's terrain, and called for a smaller embankment at an elevation of 8' and a width of 375'.⁵ In 1949, plans for the isthmus were reviewed by the

⁴Stanley Abbott, Superintendent's Monthly Narrative Reports, January 1955.

⁵Correspondence concerning the parkway's approach to Jamestown Island, and the construction of an artificial isthmus can be found in file 630, part I, "Parkway-Williamsburg to

Army Corps of Engineers who advised that a channel opening be built to meet the needs of recreational boaters and commercial fisherman.⁶ In preparation for the hydraulic fill, a survey of the area by park landscape architect L. A. Steenhagen, BPR supervisory engineer E. G. Middleton, BPR principle highway engineer C. D. Geisler, and district engineer for the Army Corps of Engineers R. B. Warren in June 1954 finalized the location of all fill and bridges between Williamsburg and Jamestown island.⁷

Bids for the work were opened in November 1954, and on 14 January 1955 the contract was awarded to the Nello L. Teer Company of Durham, North Carolina. Operations began in March and were completed in November at a total cost of \$1,081,984.55. In April equipment was moved to the site between the island and Glasshouse Point. Using dredged material from the James River, nearly 3000 linear feet of fill was used to complete the isthmus at an elevation of 8', providing an embankment crest 40' wide with a slope angle averaging 25:1. Both treated and untreated timber was used to construct a 3100' bulkhead along the entire James River side of the isthmus. Like the other areas of fill along the parkway, the embankment was created by the bleeding process. A discharge pipe was positioned at the centerline of the embankment and material was allowed to flow out and settle naturally. On 5 October 1955, the isthmus was completed, and by November earth was being placed on top of the fill to provide added stability and a suitable planting surface.⁸

Jamestown." Collection of the Colonial National Historical Park, Engineer's office, Maintenance Division, Yorktown, Virginia.

⁶Hummel, Superintendent's Monthly Narrative Reports, May 1949, 1.

⁷Abbott, Superintendent's Monthly Narrative Reports, June 1954, 2.

⁸Sam J. Marsh, U.S. Department of Commerce, Bureau of Public Roads, "Final Construction Report, Project 1D5-1E1, Colonial Parkway, Hydraulic Embankments," collection of the Colonial National Historical Park, Engineer's office, Maintenance Division, Yorktown, Virginia.

Designed by the NPS Eastern Office of Design and Construction in the fall of 1954, the isthmus bridge was constructed by the Rea Corporation of Charlotte, North Carolina. During September and October 1955, the contractor stockpiled materials at the site, and began to drive sheet piles for the north abutment cofferdam. As with other work with the Rea Corporation, progress was slow due to their involvement in many projects along the parkway. By March 1956, both abutments had been excavated, piles had been driven, and the concrete poured to 4' above the waterline. The excessive erosion of the fill around the abutments necessitated the construction of a 4' high riprap wall along the toe of the fill at the four corners of the bulkhead. Anchoring of the structural steel, the placing of form work for the deck slab and guardrails, and the pouring of concrete was completed by August 1956. After the painting of the steel, and final grading and clean up, the bridge was accepted on 5 September 1956. The total cost of construction was \$100,467.41.⁹

Similar to the Mill Creek structure, the Isthmus Bridge is a simple reinforced concrete deck structure on steel I-beams with a reinforced concrete substructure on timber piles. The 145'-6" bridge has an open span of 50' supported by five steel I-beams bolted to the abutments. The Isthmus Bridge provides two lanes of traffic for the Colonial Parkway. Plans are currently being drawn to reconstruct the rip rap wall around both the north and south abutments where erosion has washed away the original shore protection. According to park civil engineering technician Roy Bigelow, the riprap wall will be rebuilt at a higher elevation than originally constructed and backfill will be used between the new wall and the abutments to provide additional protection for the structure.

⁹Abbott, Superintendent's Monthly Narrative Reports, October 1955-August 1956; and U.S. Department of Commerce, Bureau of Public Roads, "Final Construction Report, Project 1E5, Colonial Parkway, Steel I-Beam Bridge," 25 August 1959, collection of the Colonial National Historical Park, Engineer's office, Maintenance Division, Yorktown, Virginia.

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